Office Action Summary

Application No.	Applicant(s)
08/464,034	Hyatt
Examiner	**Group Art Unit**
Marcus	

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE five MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☐ Responsive to communication(s) filed on 7/24/97.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

~~☒~~ Claim(s) all pending is/are pending in the application.

Of the above claim(s)_____ is/are withdrawn from consideration.

☐ Claim(s)_____ is/are allowed.

~~☒~~ Claim(s) All pending is/are rejected.

☐ Claim(s)_____ is/are objected to.

☐ Claim(s)_____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on_____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on_____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 11 9(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number)_____.

☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received:_____.

Attachment(s)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 35 44 46

☐ Interview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other_____

Office Action Summary

Claim Status

1. This action is responsive to amendment A, paper # 4, filed September 13, 1995; amendment B, paper # 9, filed April 25, 1996; amendment C, paper # 18, filed March 24, 1997; amendment D, paper # 20 ½, filed April 25, 1997; amendment E, paper # 25, filed December 4, 1997; amendment F, paper # 26, filed February 9, 1998; amendment G, paper # 32, filed March 29, 1999; amendment H, paper # 33, filed June 10, 1999; and amendment I, paper # 42, filed July 26, 2001; as well as IDS's filed June 5, 1995, paper #2; March 24, 1997, paper # 28; March 23, 1998, paper # 29; February 16, 1999, paper # 30; August 11, 2000, paper #35; September 7, 2001, paper # 43; and November 21, 2001, paper # 44.

In order to clarify the status of the claims, it is noted that on June 1, 1995, applicant filed this application with claims 1-20 (said claims being identical to the claims filed in 99 other application filed on or near the same date of filing). On September 13, 1995, applicant filed preliminary amendment A that canceled claims 1-20 and added claims 21-97. These new claims (21-97) were substantially identical to those of approximately 50 (of the original 100) other applications that were similarly amended (specifically applications that were designated by applicant as docket numbers 751-799). These new sets of claims only differed in substance from one another by which adjective was used in which

independent claim to modify the type of "information" that was being "generated" (generally lines 2-4 in the independent claims). Other than these adjectives, a given claim number (e.g., claim 21) appears to be identical (in substance) in all of the applications. To illustrate this claim construction over these applications, the following table is used to show the how the adjectives are changed from case to case and claim to claim. The numbers at the top of the chart represent applicant's docket number (this application is docket number 751) and the numbers in the first column are the independent claim numbers. While only docket numbers 751-754 are shown in the chart below, the same pattern of rotating these adjectives thru the claims followed for all of docket numbers 751-799.

CLAIM	751	752	753	754
21	*IMAGE	*RANGE-RELATED	*OCCULTED	*FILTERED
26	*ROTATED	*IMAGE	*RANGE-RELATED	*OCCULTED
31	*TRANSLATED	*ROTATED	*IMAGE	*RANGE-RELATED
36	*SCALED	*TRANSLATED	*ROTATED	*IMAGE
37	*PERSPECTIVE	*SCALED	*TRANSLATED	*ROTATED
46	*ANTIALIASED	*PERSPECTIVE	*SCALED	*TRANSLATED
51	*SCANNED OUT	*ANTIALIASED	*PERSPECTIVE	*SCALED
52	*FILTERED	*SCANNED OUT	*ANTIALIASED	*PERSPECTIVE
58	*OCCULTED	*FILTERED	*SCANNED OUT	*ANTIALIASED
60	*range-related detail	*OCCULTED	*FILTERED	*SCANNED OUT
65	*IMAGE	*RANGE-RELATED	*OCCULTED	*FILTERED
70	*ROTATED	*IMAGE	*RANGE-RELATED	*OCCULTED
75	*TRANSLATED	*ROTATED	*IMAGE	*RANGE-RELATED
80	*SCALED	*TRANSLATED	*ROTATED	*ROTATED
81	*PERSPECTIVE	*SCALED	*TRANSLATED	*TRANSLATED
82	*ANTIALIASED	*PERSPECTIVE	*SCALED	*SCALED
83	*SCANNED OUT	*ANTIALIASED	*PERSPECTIVE	*PERSPECTIVE
84	*FILTERED	*SCANNED OUT	*ANTIALIASED	*ANTIALIASED
85	*OCCULTED	*FILTERED	*SCANNED OUT	*SCANNED OUT
86	*RANGE-RELATED	*OCCULTED	*FILTERED	*FILTERED
87	*IMAGE	*RANGE-RELATED	*OCCULTED	*OCCULTED
88	*ROTATED	*IMAGE	*RANGE-RELATED	*RANGE-RELATED
89	*TRANSLATED	*ROTATED	*IMAGE	*IMAGE
90	*SCALED	*TRANSLATED	*ROTATED	*ROTATED
91	*PERSPECTIVE	*SCALED	*TRANSLATED	*TRANSLATED
92	*ANTIALIASED	*PERSPECTIVE	*SCALED	*SCALED
93	*SCANNED OUT	*ANTIALIASED	*PERSPECTIVE	*PERSPECTIVE
	*ALL INDEPENDENT CLAIMS THRU 94 ADD DATABASE MEMORY	*ALL INDEPENDENT CLAIMS THRU 94 ADD DATABASE MEMORY	*ALL INDEPENDENT CLAIMS THRU 94 ADD DATABASE MEMORY	*ALL INDEPENDENT CLAIMS THRU 94 ADD DATABASE MEMORY

In amendment C (paper # 18, filed March 24, 1997), applicant canceled claims 21-94 and added claims 98-291. In amendment D, filed April 25, 1997 applicant amended claims 95-97, and added new claims 339-341 (the claims were misnumbered and were renumbered 292-294 according to rule 126). On December 4, 1997, applicant filed supplemental amendments E that added claims 342-427 (the claims were misnumbered and were renumbered 295-379 according to rule 126). On June 10, 1999, applicant filed supplemental amendment H that cancels claims 95-97, 103, 104, 174-186, 282, 283, 286-300, and 302-379, substantively changed claims 98-102, 105-173, 187-281, 284 and 285 and adds new claims 380-510. On June 18, 2001, applicant filed a 1.29 request. Subsequently, on July 26, 2001, applicant filed a preliminary amendment, amendment I, which substantially amended claims 98-102, 105-118, 120-148, 150-156, 158-160, 162-173, 187-192, 194-197, 199-214, 216-220, 223-269, 271-281, 284, 285, 381-387, 389-391, 394-396, 399, 402, 405, 407-409, 411, 413, 414, 417, 420, 422, 423, 425, 427, 428, 430, 431, 433, 434, 436, 437, 439, 440, 443-446, 448, 450-453, 455, 456, 458-461, 463, 464, 467-470, 472, 473, 475, 477, 478, 480, 483-485, 487, 488, 490-494, 496, 497, 499, 501, 502, 504, 505, and 507-510 and added claims 511-548. Therefore, the following claims are currently pending: 98-102, 105-173, 187-281, 284, 285, 301, and 380-548.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 543-548 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim must depend upon the parent claim in the alternative. See MPEP § 608.01(n). Accordingly, claims 543-548 have not been further treated on the merits.

Duplicate Claims

4. The following claim pairs are duplicate or substantial duplicates: claim 223 is an exact duplicate to claim 261; claim 127 is an exact duplicate to claim 267; claim 115 is a substantial duplicate to claim 255. Applicant is advised that should claims 223, 127 and 115 be found allowable, claims 261, 267 and 255 respectively, will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Currently, none of these claims have been found allowable.

Claim Rejections - 35 U.S.C. § 112, 1st Paragraph

5. Claims 98-102, 105-173, 187-281, 284, 285, 301, and 380-542 (all pending claims) are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

6. The detailed statement of the rejection advanced in the previous Office Action (paper #34) in paragraphs 2 and 4 are incorporated herein by reference.

7. Any analysis of whether a particular claim is supported by the disclosure in an application requires a determination of whether that disclosure, when filed, contained sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the claimed invention. The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosure coupled with information known in the art without "undue experimentation." Mineral Separation v. Hyde, 242 U.S. 261, 270 (1916). United States v. Telectronics, Inc., 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988). In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

While the prior art setting may be mentioned in general terms, the Examiner submits that the essential novelty, the essence of the

invention, must be described with greater particularity than that exhibited in this application. All of the independent claims in this case recite (apparently) either an apparatus or a processing system, for processing images, that includes various combinations of: spatial interpolation; subpixel vector changes; transformation processor "coupled to the spatial interpolation" circuit and responsive to the spatial interpolation; resolution reduction; vector communication, including motion vectors and various fields of vectors and vector specifics as recited in claims such as claims 475, 477, 478, 480, 483-485, 487, 488, 491, 494, and others; shading; "fraction removal resolution reduction"; "Fourier transformation" (the term "Fourier" **never** appears in the original specification); roundoff resolution; temporal interpolation; a "DVD product"; "generating artificial intelligence information" in response to items such as "the transformed image information (claim 129); "GPS navigation"; as well as the specifics of the processes/circuits as recited in claims like claims 99-102; as well as many other processes. As the examiner in the rejection based on an inadequate written description, the Applicant did mention such an image processing system combining some of these various processes in his disclosure, which he originally filed in October, 1984. However, the Applicant provided very little detail about the compression system he had in mind, and what little detail he did provide was buried in a volume of text relating to image

registration and memory and display systems. Now, some 17 years later, the Applicant claims an image processing system and an accompanying process that bear little resemblance to the original disclosure and he claims them in excruciating detail. He has had the benefit of witnessing the developments in image processing systems, and their uses, over the past 17 years before submitting his claims, and the claims recite features and combinations of features never contemplated by the original disclosure.

While there may be some rudimentary disclosure in the specification directed to an image processing system, there are none of the details necessary to perform the variously claimed: spatial interpolation; subpixel vector changes; transformation processor "coupled to the spatial interpolation" circuit and responsive to the spatial interpolation; resolution reduction; vector communication, including motion vectors and various fields of vectors and vector specifics as recited in claims such as claims 475, 477, 478, 480, 483-485, 487, 488, 491, 494, and others; shading; "fraction removal resolution reduction"; "Fourier transformation" (the term "Fourier" **never** appears in the original specification); roundoff resolution; temporal interpolation; a "DVD product"; "generating artificial intelligence information" in response to items such as "the transformed image information (claim 129); "GPS navigation"; as well as the specifics of the processes/circuits as recited in claims like claims 99-102; as well

as many other processes, (and corresponding processors performing these functions) functioning in response to one another or in combination with (or as part of) the claimed image processing system. While the features may be readily available today (in 2002), such as in tracking systems, motion compression systems, graphics programs and video games, for example, they were not taught by Applicant and Applicant is not entitled to the claims directed thereto. These various elements were not at all discussed in any single embodiment of the specification or shown in any Figure. Therefore, the specification can not be enabling for the specifically claimed combination of these elements.

Any analysis of whether a particular claim is supported by the disclosure in an application requires a determination of whether that disclosure, when filed, contained sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the claimed invention. The test of enablement is whether one skilled in the art could make or use the claimed invention from the disclosure in the patent coupled with information known in the art without undue experimentation. The disclosure does not describe or enable the combination of these disparate elements or, in many cases, the individual elements themselves, how they would be used or how they would be constructed to perform the claimed processes.

The rejected claims are directed to systems with individual elements that operate together. This is shown by the claim

recitations directed to interconnections and interrelations between the claimed elements (language such as "coupled to" and "in response to", for example, but not limited thereto) that is not supported or described in the originally filed specification. The specification does not contain any disclosure directed to the combination of elements, represented by these claimed interconnections and interrelations. The original specification does not disclose or enable the complete systems that are now being claimed. Further, the individual limitations are, in general, not enabled in, and of, themselves. The specification, at best, simply mentions some of the claimed words (or variations thereof) without providing any actual disclosure as to how the elements are to be constructed or how the elements are to be used or how they function, in combination with one another or individually.

Simply disclosing various individual elements without the specifics of how they function together is tantamount to stating that a text book enables all possible combinations of the specifics individually discussed in separate chapters. For example, an image processing text book, which in different chapters describes image acquisition, image filtering operations, image storage techniques, and image display, could not be construed as an enabling disclosure for a claimed video cassette recorder, a flight simulator, a medical imaging device, or any other claimed image processing "system" as a whole. A system is a combination of elements, where the combination is resultant from the interconnection of various

components to perform a function. The interconnections and interactions of the claimed components to perform the claimed functions in combination is lacking from Applicant's specification.

Essentially, for nearly every embodiment or application mentioned in the original specification, each instance raises the question of "How?" or "What?: "How is this implemented?"; "How is this constructed?"; "How does this function?"; "How does this operate with other recited elements discussed?"; "What is this element doing?"; "What are these elements for?"; etc. Currently, there are numerous possibilities mentioned in the specification but there are no specifics provided. Without these specifics, it is clear that Applicant did provide an enabling disclosure of the claimed invention or the corresponding material mentioned in the specification (as best that it can be determined what, if anything actually from the originally filed specification actually does correspond to the presently pending claims), but simply had some things that might be able to be done, but no specifics as to how to implement these possibilities.

The following are some additional examples of claimed, yet non-enabled subject matter:

(1) Each of the claims (either explicitly or by dependency) repeatedly recite interconnections and interrelations between the claimed elements that are absent from, and therefore unsupported by the original disclosure. In summary, the claims define: (among

many more elements in the remainder of the claims) spatial interpolation; subpixel vector changes; transformation processor "coupled to the spatial interpolation" circuit and responsive to the spatial interpolation; resolution reduction; vector communication, including motion vectors and various fields of vectors and vector specifics as recited in claims such as claims 475, 477, 478, 480, 483-485, 487, 488, 491, 494, and others; shading; "fraction removal resolution reduction"; "Fourier transformation" (the term "Fourier" **never** appears in the original specification); roundoff resolution; temporal interpolation; a "DVD product"; "generating artificial intelligence information" in response to items such as "the transformed image information (claim 129); "GPS navigation"; as well as the specifics of the processes/circuits as recited in claims like claims 99-102; as well as many other processes. All of the claims contain the same uses of the phrases "coupled to" and/or "in response to". Refer to claims any of the other 300+ pending claims for additional examples of claimed interconnections and interrelations.

The "disclosure must be enabling as of the filing date" as explained and legally supported by MPEP 2164.05(a). The original disclosure comprises the originally filed specification, claims and figures. The analysis of enablement to follow is based on Applicant's originally filed disclosure. It is noted that many of Applicant's claims recite the interrelations (the "in response to"

language) in the absence of the interconnections (the "coupled to" language). However, the same analysis holds true for these claims, as all of the claimed relations must be described in the original disclosure in such a way as to enable one of ordinary skill in the art to make and use the claimed invention without undue experimentation.

Referring to the example claim, Applicant's originally filed specification and figures do not describe or even depict, let alone provide enabling support for, the claimed system comprising the interconnections and interrelations between the elements (the "in response to" or "coupled to" types of language associated with the functions of the claimed elements). There is simply no description anywhere in the specification of such an interconnected and interrelated system being able to perform the claimed functions; and there are simply no figures that depict such a system. The specification does not provide for either of these critical elements. Furthermore, the originally filed specification does not disclose how these elements are "coupled to" one another. Even if the specification did describe the claimed elements as being connected to one another (which it does not), it would still not be enabling as it must still disclose how the elements are connected to one another. What elements are used to couple the various elements also needs to be disclosed. If the elements used to perform the coupling are not disclosed, and there is no enabling disclosure as to how the claimed elements are "coupled to" one

another, the claimed recitations can not be considered to be enabled.

Beginning with the figures, one of Applicant's most comprehensive system block diagrams appears in figure 1A. This generalized block diagram seems to depict an image processing system. However, the above claimed system is simply not depicted by the figure. That is, there are no depictions of the claimed interconnections and interrelations commensurate with the example claim. Likewise, none of the other figures depict the claimed invention. Even if there existed a rudimentary and generalized block diagram that could be construed as depicting the claimed system [which there is not], an actual written description of the system would also be required in order to provide an enabling disclosure of that which is depicted. For example, MPEP 2164.06(a) states that "[a]n adequate disclosure of a device may require details of how complex components are constructed and perform the desired function" as described with respect to *In re Scarbrough*. In *In re Scarbrough*, the claims were directed to a system which comprised several component parts (e.g., computer, timing and control mechanism, A/D converter, etc.) identified only by generic name and overall ultimate function. This is similar to Applicant's claims, whereby the claims recite several component parts, having interconnection and interrelations, and referred to by generic names and overall ultimate functions. MPEP 2164.06(a) further states that "[t]he court concluded that there was not an enabling

disclosure because the specification did not describe how 'complex elements known to perform broadly recited functions in different systems would be adaptable for use in Appellant's particular system with only a reasonable amount of experimentation' and that 'an unreasonable amount of work would be required to arrive at the detailed relationships appellant says that he has solved.' (182 USPQ at 302)." Therefore, even if a figure such as figure 1A were construed as depicting the claimed system as a generalized block diagram (which it does not), undue experimentation would be still be required to make and use the invention for the same reasons described in *In re Scarbrough.* While Applicant also disclose circuit diagrams showing connections between various circuit elements such as figure 6AC, and several flow diagrams such as figure 2H, these diagrams, the steps and the circuit elements depicted therein bear no disclosed relationship to the claimed invention as defined by the claims. Therefore, Applicant's generalized block diagrams and circuit depictions, which have no disclosed relationship with the claimed subject matter and which do not depict the claimed elements interconnected and interrelated in such as manner as to produce the claimed results, do not provide adequate support to enable one of ordinary skill in the art to make and use the claimed invention without undue experimentation.

Not only are the claimed connections and relations lacking from the figures, but actual functional elements also lack enablement in the specification. Each of the individual elements

of the claims, such as: spatial interpolation; subpixel vector changes; transformation processor "coupled to the spatial interpolation" circuit and responsive to the spatial interpolation; resolution reduction; vector communication, including motion vectors and various fields of vectors and vector specifics as recited in claims such as claims 475, 477, 478, 480, 483-485, 487, 488, 491, 494, and others; shading; "fraction removal resolution reduction"; "Fourier transformation" (the term "Fourier" **never** appears in the original specification); roundoff resolution; temporal interpolation; a "DVD product"; "generating artificial intelligence information" in response to items such as "the transformed image information (claim 129); "GPS navigation"; as well as the specifics of the processes/circuits as recited in claims like claims 99-102; as well as many other processes, lack an enabling description per se. Therefore, even if the claimed connections and relations were enabled, the function elements themselves lack an enabling written description. Various examples of specific, non-enabled functional elements are also provided herein.

Not only are the claimed connections and relations completely lacking in the figures, but a description of the claimed connections and relations are also lacking in the specification. There is simply no description in the specification of the claimed elements being "coupled to" each other and performing the claimed

functions "in response to" each other. Further, the originally filed specification does not disclose or describe a complete system where these various claimed elements are connected to one another to form a complete system. Therefore, even if applicant did provide enablement for each of the individually claimed elements (which he does not), there would still exist a lack of enablement for a system where these claimed elements are interconnected and interoperative with one another. At best, the specification would be disclosing numerous individual elements and not a complete functional system. Without disclosing the claimed system where the claimed elements are actually functioning with one another, and how they are interconnected with one another, the claimed system would be lacking enablement as a whole. Simply disclosing various individual elements without the specifics of how they function together would be tantamount to stating that a text book enables all possible combinations of the specifics individually discussed in separate chapters. For example, an image processing text book, which in different chapters describes image acquisition, image filtering operations, image storage techniques, and image display, could not be construed as an enabling disclosure for a claimed video cassette recorder, a flight simulator, a medical imaging device, or any other claimed image processing "system" as a whole. A system is the interconnection of various components to perform a function, and the interconnections and interactions of the claimed components to performed the claimed functions (as in the example

claim above) is that which is lacking from Applicant's specification.

With respect to the Basic language computer programs disclosed in applicant's specification and the "experimental system" discussed in the specification, these have both been fully reviewed and considered as to how they may correspond to the actual claimed systems and are found to be lacking. Specifically, what little details that are in the specification about the "experimental system" do not correspond to the claimed system (see above for the details that are now being claimed). The "experimental system" as discussed in the specification does not appear to perform the claimed processes (including: spatial interpolation; subpixel vector changes; transformation processor "coupled to the spatial interpolation" circuit and responsive to the spatial interpolation; resolution reduction; vector communication, including motion vectors and various fields of vectors and vector specifics as recited in claims such as claims 475, 477, 478, 480, 483-485, 487, 488, 491, 494, and others; shading; "fraction removal resolution reduction"; "Fourier transformation" (the term "Fourier" **never** appears in the original specification); roundoff resolution; temporal interpolation; a "DVD product"; "generating artificial intelligence information" in response to items such as "the transformed image information (claim 129); "GPS navigation"; as well as the specifics of the processes/circuits as recited in

claims like claims 99-102;). None of the discussion of the "experimental system" mentions that it performs these functions, either individually or in combination with one another as is being claimed. What little that the originally filed specification does say about the "experimental system" is self-serving and vague and is not directed to the claimed system. Further, the discussion of the Basic language computer programs also does not discuss or indicate that they perform these functions either individually or (as claimed) in combination with one another. Additionally, only one of the computer programs is actually extensively discussed in the specification (the "DIS.ASC" program on pages 248+ of the specification). The other programs are only briefly mentioned and not discussed in detail. Also, there are no flow charts to facilitate the understanding and functions of these programs. However, the Examiner has thoroughly reviewed each of the programs and has found that they do not actually correspond to the claimed limitations at all. Further, the programs are apparently directed to operate with specific hardware as indicated by the various input and output statements. Additionally, even if the programs were somehow determined to correspond to the claimed invention (which they do not), the programs are replete with problems. The programs contain undefined variables (which would tend to either make it crash or to potentially give erroneous answers), potential infinite loops, and extensive amounts of code that is non-functional (i.e., lines that begin with an " '" and are thus not executed as stated in

applicant's own specification). These non-functional lines of code make the review of the programs extremely difficult to follow and decipher. These extra lines only serve to clutter the actual functions of the program and, since they are non-executable, serve no actual purpose in the programs. It is hereby explicitly stated that the Examiner is not referencing comment lines, which are normally used to document a program but lines of code that would normally be executed if they did not begin with an "'". In some instances, there are lines that begin with an "'" that are input statements for variables that are used later in the programs, thus making the variables undefined. Additionally, there is nothing in the originally filed specification that indicates how these programs would function with one another. Would they run consecutively? Would one program call another (though no code indicates as such)? The specification is silent on this.

Therefore, since the Basic language computer programs and the discussion of the "experimental system" do not actually correspond to the claimed system and limitations (either individually or in combination), they can not be considered to enable or describe the claimed system.

The Examiner recognizes that the "written description" and "enablement requirements" are related, but are distinct and require a separate analysis using separate criteria (MPEP 2164). Regarding enablement, MPEP 2164.01 states that "the standard for determining

whether the specification meets the enablement requirement was cast in the Supreme Court decision of *Mineral Separation v. Hyde* ... which postured the question: is the experimentation needed to practice the invention undue or unreasonable?" (MPEP 2164.01). Examiner also recognizes that "the test of enablement is not whether any experimentation is necessary, but whether, if experimentation is necessary, it is undue" (In re Angstadt as described at MPEP 2164.01). The MPEP sets forth eight (8) requisite factors to consider in the determination of "undue experimentation" at paragraph 2164.01(a), Undue Experimentation Factors. Although it is <u>not</u> necessary that every enablement analysis consider all of the factors, in support of Examiner's conclusion of lack of enablement, each of these factors, having been fully and carefully considered, will be addressed (see MPEP 2164.01(a)):

A. The breadth of the claims: The claims are recited broadly, without providing one of ordinary skill with any insight into any specific method of making the invention commensurate with the claimed interconnections and interrelations. For example, the claimed spatial interpolation; subpixel vector changes; transformation processor "coupled to the spatial interpolation" circuit and responsive to the spatial interpolation; resolution reduction; vector communication, including motion vectors and various

fields of vectors and vector specifics as recited in claims such as claims 475, 477, 478, 480, 483-485, 487, 488, 491, 494, and others; shading; "fraction removal resolution reduction"; "Fourier transformation" (the term "Fourier" **never** appears in the original specification); roundoff resolution; temporal interpolation; a "DVD product"; "generating artificial intelligence information" in response to items such as "the transformed image information (claim 129); "GPS navigation"; as well as the specifics of the processes/circuits as recited in claims like claims 99-102, as well as many other processes. There are no specific claim elements, that are supported by an enabling disclosure, that would provide one of ordinary skill with insight into making a "processor" or a "circuit" which performs the claimed functions. While a broadly recited claim is not an indicator of a lack of enablement, such a broadly recited claimed system would necessarily require an adequate written description for enablement. However, given the complete lack of a written description of the claimed subject matter, especially a written description showing the claim elements being connected and related as claimed, much less showing how the claimed elements are coupled and related (e.g., what type of couplings are used, how are the elements coupled, what acts are actually responded to in the "in response to" language, etc.), one of

ordinary skill would be starting with a clean design slate, and therefore would require the amount of experimentation required to actually invent the claimed subject matter in the first place; and this amount of experimentation is necessarily undue. While applicant does provide figures depicting basic electronic circuitry being coupled to other circuitry (e.g., figure 6AC which is directed to memory architecture and configurations, and joystick interface and control; see the Brief Description of the Drawings at specification pages 7-9), these figures bear no disclosed relationship to the elements of example claim, or any other claimed elements, and therefore cannot be construed as providing an enabling disclosure.

B. The nature of the invention: The claimed invention is an electronic image processing system, requiring the complex interconnections and interrelations of sophisticated hardware elements, for performing such highly mathematical tasks as spatial interpolation; subpixel vector changes; transformation processor "coupled to the spatial interpolation" circuit and responsive to the spatial interpolation; resolution reduction; vector communication, including motion vectors and various fields of vectors and vector specifics as recited in claims such as claims 475, 477, 478, 480, 483-485, 487, 488, 491, 494, and others; shading; "fraction removal resolution reduction"; "Fourier transformation" (the term "Fourier" **never**

appears in the original specification); roundoff resolution; temporal interpolation; a "DVD product"; "generating artificial intelligence information" in response to items such as "the transformed image information (claim 129); "GPS navigation"; as well as the specifics of the processes/circuits as recited in claims like claims 99-102, as well as many other processes. Such complex subject matter merits a thorough and detailed disclosure of how the claimed elements are, in fact, connected to each other, in order to perform the claimed tasks "in response" to each other. Again, the instant disclosure does not even depict a single interconnection related to the claimed system exemplified above.

C. The state of the prior art: The state of the prior art, as exemplified by the art cited in the art rejection herein, was fully considered in making the enablement rejection. MPEP 2164.03 states, "[t]he amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art..." and that "[t]he 'amount of guidance or direction' refers to that information in the application, as originally filed, that teaches exactly how to make or use the invention." This passage further stats that "... if little is known in the prior art about the nature of the invention ... the specification would need more detail as

to how to make and use the invention in order to be enabling." An examination of each of the prior art references cited herein reveals a complete, detailed and enabling written description, including a description of connections and relations between circuit elements that result in the claimed functions and in full support of the claimed subject matter. This level of detail was necessary at the time the invention was made, in order to enable one of ordinary skill in the art to make and use these inventions without undue experimentation. Likewise, the same level of detail would be required in order for Applicant's disclosure to be enabling. The art of electronic image processing remains an emerging and relatively recent art, and was in its infancy at the time of Applicant's invention. As evidence of this, it is noted that the overwhelming proportion of patents issued in this art have been issued in only the last 15 years, and a relative few patents and articles exist in the art prior to the time of Applicant's invention. Those that were issued (see the prior art cited herein, and the prior art cited by Applicant) comprised detailed and complete descriptions of the claimed subject matter, with enabling figures and written descriptions of the claimed interconnections and interrelations. This factor was fully considered in the determination of the state of the art at the time of Applicant's invention; and the state of the art merited at least a description of how such complex

electronic circuitry was connected and related in order to perform such complex image processing functions. Applicant fails to provide any description of the claimed, interconnected and interrelated system, let alone a simplified block diagram depicting the system.

D. The level of one of ordinary skill: Image process is a highly skilled art. However, even given a practitioner of the highest skill level at the time the invention was made, at least some disclosure of the claimed subject matter would be required for that person to make and use the invention without undue experimentation. Given that the connections and relations of the example claim are simply not disclosed at all, the practitioner of the highest skill would be starting with a clean design slate. In other words, the practitioner would be attempting to make and use the claimed invention with the equivalent of no disclosure at all, and thus the experimentation performed would be equivalent to that which would be required to make the claimed invention in the first place.

E. The level of predictability in the art: The MPEP 2164.03 states, "[t]he amount of guidance or direction needed to enable the invention is inversely related to ... the predictability in the art" and that "[t]he 'predictability or

lack thereof' in the art refers to the ability of one skilled in the art to extrapolate the disclosed or known results to the claimed invention." Again, it is noted that the claimed invention is an electronic image processing system, requiring the complex interconnections and interrelations of sophisticated hardware elements, for performing such highly mathematical tasks of spatial interpolation; subpixel vector changes; transformation processor "coupled to the spatial interpolation" circuit and responsive to the spatial interpolation; resolution reduction; vector communication, including motion vectors and various fields of vectors and vector specifics as recited in claims such as claims 475, 477, 478, 480, 483-485, 487, 488, 491, 494, and others; shading; "fraction removal resolution reduction"; "Fourier transformation" (the term "Fourier" **never** appears in the original specification); roundoff resolution; temporal interpolation; a "DVD product"; "generating artificial intelligence information" in response to items such as "the transformed image information (claim 129); "GPS navigation"; as well as the specifics of the processes/circuits as recited in claims like claims 99-102, as well as many other processes. The level of predictability at the time of Applicant's invention is demonstrated by the prior art (such as the art cited herein), which reveals a complete, detailed and enabling

written descriptions, including a description of connections and relations between circuit elements resulting in the claimed functions. Given that Applicant's specification disclosure does not even depict a single interconnection related to the claimed system exemplified above, one of ordinary skill in the art would be required to predict every aspect of the claimed invention, and this would not even be possible today, let alone at the time the Applicant's invention.

F. The amount of direction provided by the inventor: The MPEP paragraph 2164.01(b) states, "[a]s long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim, then the enablement requirement ... is satisfied. *In re Fisher*". Again, there is absolutely no written description and there are no figures depicting the connections, relations and resulting functions of the claimed invention as described above, and thus there is absolutely no direction provided by the Applicant in the making of the claimed invention.

G. The existence of working examples: The MPEP paragraph 2164.02 states that while "[a]n applicant need not have actually reduced the invention to practice prior to filing",

a "[l]ack of a working example, however, is a factor to be considered ..." Examiner has considered this factor. While Applicant discloses a section referred to as an "experimental system", and occasionally refers to this "experimental system", there is no disclosure of this "experimental system" as having the claimed connections and relations, and resulting in the claimed functions. Further, nothing in the originally filed specification describes or shows the details of this experimental system. Thus, Applicant's "experimental system" cannot be construed as a "working example" of the claimed subject matter.

H. The quantity of experimentation needed to make or use the invention based on the content of the disclosure: As described above, MPEP 2164.06(a) states that "[a]n adequate disclosure of a device may require details of how complex components are constructed and perform the desired function" as described with respect to *In re Scarbrough*. In *In re Scarbrough*, the claims were directed to a system which comprised several component parts (e.g., computer, timing and control mechanism, A/D converter, etc.) identified only by generic name and overall ultimate function. This is similar to Applicant's example claim above, whereby the example claim recites several component parts, having interconnection and interrelations, and referred to by generic names and overall ultimate

functions. MPEP 2164.06(a)further states that "[t]he court concluded that there was not an enabling disclosure because the specification did not describe how 'complex elements known to perform broadly recited functions in different systems would be adaptable for use in Appellant's particular system with only a reasonable amount of experimentation' and that 'an unreasonable amount of work would be required to arrive at the detailed relationships appellant says that he has solved.' (182 USPQ at 302)." Therefore, given a complete lack of a written description of these claimed connections and relations for performing the claimed functions, undue experimentation would necessarily be required to make and use the invention for the same reasons described in *In re Scarbrough.* Again, one of ordinary skill in the art at the time the invention was made, given the claimed invention and given Applicant's original disclosure, would be starting with a clean design slate, resulting the full amount of experimentation required to design and use entire claimed invention. This amount of experimentation is undue.

In summary, and regarding Examiner's burden, MPEP 2164.04 (Burden on the Examiner Under the Enablement Requirement) states that the analysis and conclusions of lack of enablement "are based on the factors discussed in MPEP 2164.01(a)", and that (emphasis in original) "[t]he language should focus on these factors [factors A-

H above], reasons, and evidence that lead the examiner to conclude that the specification fails to teach how to make and use the claimed invention without undue experimentation ..." This is exactly what Examiner has done. While the analysis is "based" on these factors, and while each factor does not have to be considered in each case, each of factors A-H have been fully and carefully considered above. Regarding the claimed interconnections ("coupled to" type of language) and interrelations ("in response to" type of language), Applicant's specification and figures simply fail to disclose the claimed elements being "coupled to" each other, for performing the claimed functions "in response to" each other, as well as disclose how the claimed elements are coupled to each other (e.g., wires, light, radio frequency connections, connectors, buses, etc.). Therefore, given Applicant's original disclosure, "the experimentation needed to practice the invention", would be "undue" and "unreasonable" (see MPEP 2164.01).

(2) Many claims recite limitations for making "products". For example, claim 392 recites (emphasis added):

> "A process as set forth in claim 390, further comprising the act of making a building product in response to the process set forth in claim 390."

While claim 392 is exemplified, many other claims (over a hundred claims in total) recite either the same limitation of "making a building product", or similar limitations for making other (and

very diverse) types of products. In addition, these claims recite limitations for making one or more diverse types of products "in response to" method or apparatus limitations of a parent claim. However, there is no disclosure of making a product, either alone or in response to anything, in the specification as originally filed.

Using the same detailed analysis set forth in MPEP paragraphs 2164 - 2164.08(c), as fully developed in the "interconnections" and "interrelations" example above (the details of which will not be repeated here), Examiner has concluded that there is simply no enabling description in the specification, or any enabling depiction in the drawings, of making these claimed "products". Particularly, there is no enabling description of making the claimed "products" in response to the limitations of other claims; such as "making a building product in response to the process set forth in claim 390" (emphasis added) as exemplified above.

A review of the specification reveals that, with one exception, variations of the term "product" (e.g., "products") is used in the specification only in a mathematical sense (such as for multiplication or a sum-of-products). For example, page 64 of the specification states (emphasis added):

> "The filtering teachings herein are generally applicable, such as for spatial and temporal filtering of radar, seismic, and sonar systems; kernel processing of information; multiplier and sum of the products

> architectures for computations; table processing as with the weight table architecture; and latching of multiple parameters in multi-parameter registers for parallel processing."

The only other reference to a product is on page 454 which recites (emphasis added):

> "[A]lthough the final product of a graphic art system may be static photographs, real time operation permits an operator to efficiently and rapidly configure images."

While this one sentence appears to be discussing a "photograph" as being a product of a graphic arts system, this is nothing more than an axiomatic statement. This use does not appear to be related to any of the elements recited in the "product" claims. Even if a "photograph product" were claimed in the same manner as the example claim above, this sentence would not be sufficient to enable one of ordinary skill in the art to make and use the invention without undue experimentation. That is, a statement that "the final product of a graphic art system may be static photographs does not constitute an enabling disclosure. After all, there are entire patent disclosures dedicated to the production of photographs in a graphic arts system. Furthermore, this sentence is completely unrelated to the claimed "building product" exemplified above.

Examiner has also thoroughly searched the specification for any terminology that is even remotely related to "buildings", such

as "structures", "construction", "houses", etc. The only instances of these terms, or variations of these terms, appear out of context with the claimed subject matter. For example, the specification states (emphasis added):

> Page 101: "As the remainder RR builds up with successive additions of the slope parameter MR, arithmetic carry from the remainder portion RR of the Y-register propagates to the YR portion of the Y- register for updating the YR-parameter."
>
> Page 400: "Also, continuous cropping can be provided, such by changing the flag or color structure of the overlay images."
>
> Page 482: "The workstation can be configured as a self-contained stand-alone system, housed in an ergonomically-designed table-type enclosure."

These passages would certainly not enable one of ordinary skill in the art to make and use the claimed invention for making the claimed "products", such as the exemplified "building product".

Furthermore, there are no descriptions in the specification as to exactly what these claimed "products" are intended to be. Without even a single mention in the specification of any terminology remotely related to a "building" product or any of the other claimed products, the task of interpreting the claim terminology for purposes of making and using the invention becomes insurmountable. For example, what is a "building product"? Is a building product a piece of wood, a nail, a screw, etc?

In another example, claims 435 and 492 recite a limitation for

"making an oil product". Examiner has again thoroughly searched the specification for any terminology even remotely related to "oil", including "oil" itself, "petroleum", "fossil", "fuel", "gasoline", "gas", and many others. The only instance of any of these terms appears at page 479, which states (in part; emphasis added):

> "... In the near future, non-military satellites will generate large high detail images for commercial applications. Companies involved in exploration, such as for oil and minerals; in weather, such as TV networks and airlines; in geography, such real estate developers; and government agencies needing information on weather, troop and equipment movements, and other situations will obtain images for analysis. Geographical images of the type found in World Atlas books; such as topological maps, road maps, natural resource locations, population distributions, and others; will be commercially available on optical disks."

While this passage may sets forth a prophetic statement about the "future" uses of satellite imagery, there is no disclosure of making an "oil product" per se, let alone "in response to" anything (it is noted that this is also the only mention of "mineral", although a "mineral product" is claimed in at least claim 465; similarly, this is the only recitation of "natural resource" even though a "natural resource product" is recited in at least claim 462). In addition, there is no disclosure of what is meant by the claimed "oil product". What is an oil product? Is "plastic" an oil product? The MPEP, at paragraph 2164, Enablement, states that

"[t]he purpose of the requirement that the specification describe the invention in such terms that one skilled in the art can make and use the claimed invention is to ensure that the invention is communicated to the interested public in a meaningful way." However, without even knowing what is meant by the various products as exemplified above, let alone being able to actually "make" the products in the manner being claimed, one of ordinary skill in the art would not be able to "make and use the claimed invention" and the disclosed invention cannot be construed as being "communicated to the interested public in a meaningful way."

Similarly, and possibly even more egregious, claim 111 (at least) recites "the act of making a DVD product". The term "DVD" **never** appears in the original specification. "DVD" is an acronym for the term "digital versatile disk". The term "versatile" also does not appear in the original specification. For that matter, the earliest patent the Examiner could locate in the PTO database using the term "digital versatile disk" is in U.S. Patent # 5,631,888 which issued on May 20, 1997 (and was filed on April 3, 1996), nearly 13 years after the priority date claimed by applicant! Specifically, the reference defines and differentiates a "DVD" as (emphasis added):

> "As one type of optical disc, the CD (Compact Disc) is recorded mainly with audio data. As another type, the CD-ROM (CD-Read Only Memory) is recorded with a large volume of data for computers. As another type, the LD (Laser Disc) is recorded with video data as well as the audio data. As another type, the **DVD (Digital Versatile**

> **Disc)** is recorded with various control data in addition to the video and audio data to allow various presentation of the video and audio data. As another type, the HVD (High Vision disc) is recorded with high vision data.
>
> In those various types of optical discs, the standard record density is different from type to type. Thus, the density of the record track in the radial direction of the disc (i.e. track density) is also different from type to type. For example, the DVD, which is based on the video data compressing and encoding technique, has the same radius of recordable area as the CD, but has the recordable time of 135 minutes, which is about twice that of the CD (which has the recordable time of 74 minutes)."

This reference clearly specifies what is now meant by a "DVD" (as well as at the time these claims were filed). Further, the reference defines the differences between DVDs, CDS, CD-ROMs and laser disks. Applicant's disclosure never discloses or defines a "DVD". These preceding remarks apply equally to any of the other claims that recite a "DVD" in any way.

Additionally, if applicant intends for the claimed term "DVD" to mean something other than the standard and accepted acronym for a "digital versatile disk", then he is attempting to use the term "DVD" in a way repugnant to the accepted meaning of the term and it is suggested that he replace the term "DVD" with what he actually intends to be claiming.

In summary, the specification fails to provide enabling support for claimed products, how these "products" are made, how they are made "in response to" the other claim limitations, and even what these claimed "products" are intended to be. Therefore, without even one mention of anything related to making such claimed

products in the specification or figures, one of ordinary skill in the art would be required to not only guess what the claimed products are, but would be beginning with a clean design slate, with absolutely not guidance or "direction" from the specification. Therefore, using the analysis set forth in MPEP paragraph 2164.01(a), given the broad "breadth" and "nature" of the "product" claims, the state of the prior art where entire disclosures are dedicated to making products, the level of one of ordinary skill, the low level of predictability in the art, the lack of "direction" provided by the inventor in making and using the "product" claims and the lack of "working examples", "the experimentation needed to practice the invention", would be "undue" and "unreasonable" (see MPEP 2164.01).

In summary, the specification fails to enable or provide an adequate written description for the claimed products, or even what these claimed "products" are intended to be.

8. Claims 98-102, 105-173, 187-281, 284, 285, 301, and 380-542 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and thus constitute new matter.

9. The detailed statement of the rejection advanced in the previous Office Action (paper #34) in paragraph 6 and 7 is

incorporated herein by reference.

Numerous terms in the claims do not find clear support or antecedent in the descriptive portion of the specification. Specifically, all of the terms objected to in the 112, 1st paragraph (above) directed to the claims lack clear support and lack antecedent basis in the originally filed specification. Rather than repeating the extensive discussion of these terms, the above statements are incorporated herein by reference. Applicant is required to show where he has antecedent basis in the specification for each and every term recited in the claims.

10. In advancing this rejection, the Examiner has followed the "Guidelines for Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1, 'Written Description' Requirement" (Federal Register/Vol. 66, No. 4/ Friday, January 5, 2001/Notices/page 1099) to the extent applicable. The claims on Appeal are all newly added claims with new limitations. There are no original claims remaining in the application.

To begin with, in order to facilitate Examiner's reasoning as to why the written description is inadequate, the structure of the specification must be understood.

The preponderance of the specification is not directed to a single, specific image processing system or even multiple specific systems. The specification is directed to a generalized image processing system having numerous inputs, outputs, and processing

elements that can allegedly be configured in numerous, optional configurations. The system is seen generally in Figure 1A which depicts a multiple-channel system, and in Figure 1C which depicts a single-channel version of Figure 1A (Figure 1C is discussed at specification page 19, bottom paragraph.) The system (referred to as the "generalized system" hereinafter) is first discussed generally, and then each of the blocks are discussed more specifically (e.g., the "geometric processing" of block 110 is discussed at specification page 66). Regarding the generalized system, the specification states, for example, that "[t]he image processor can be implemented in a range of configurations ...", "[v]arious modules are discussed to accommodate different types of input and output interfaces and multiple channel capability", "[m]odularity permits the basic configuration to be implemented in multitudes of ways using such modules", "[t]he present invention can be used in many applications", "[v]arious other configurations can also be provided", "the system of the present invention can be implemented in various subsets of this configuration and various modifications to this configuration", etc. at specification pages 16-19, under the section titled "General" beginning at page 16. Thus, the majority of the specification discusses a generalized, modularized system without having any particular configuration relating to any particular application; it is just a generic discussion of a generic modular system and its various components that can allegedly be configured and/or reconfigured to perform

numerous and disparate image processing functions without any specifics as to how these configurations and/or reconfiguration can be implemented. While Applicant discloses circuit diagrams showing connections between various circuit elements, such as Figures 6B-6AH, and several flow diagrams such as Figure 2H, these diagrams, the steps and the circuit elements depicted therein bear no disclosed relationship to the claimed invention. Figures 6B-6AH are generally directed to memory architecture, memory addressing, and joystick controls (see pages 7-9 of the original disclosure) and not the claimed combination of elements/processes.

The only discussion of particular applications of the system appear at pages 440-502; most of which are suggestions and possibilities of uses without actually describing specific systems, how the systems could be constructed, or how they would function as part of, or in combination with, the generalized system.

For example, page 440, bottom paragraph, states, "[i]n medical applications, the medical investigator can investigate tomographic, X-ray and ultrasound images". However, there is no discussion of how the various modules of the system can be configured to perform these applications.

A second example is on page 454 of the specification Applicant discloses what he terms a "Special Effects Application", the <u>whole</u> of which is replicated below.

> A low cost special effects system can be used in a TV studio application, a business graphics application, and other applications. For example, special effects can

> be used to generate slides for business presentations and to generate graphic art images for advertisements. Although the final product of a graphic art system may be static photographs, real time operation permits an operator to efficiently and rapidly configure images. Real time operation and interactivity enhances productivity.

A third example is on page 466 of the specification where Applicant discloses what he terms a "Flight Simulator Application", the whole of which is replicated below (It is noted that this section is one cited by Applicant in his discussion of the claims on pages 9-16 of the Brief).

> A flight simulator, such as an aircraft navigational simulator or bombing simulator, can be effectively implemented with the Videonic system. Ground terrain is simulated with digitized photographs. Occulting objects; such as tanks and trucks on the ground, lower flying aircraft, and smoke plumes; are generated with overlays. The overlays are independently manipulated to provide relative motion and 3D-perspective between overlays for realism.

Another example is on page 494 of the specification where Applicant discuses robotic applications and indicates, in part:

> Visual guidance relates to a form of robotics for a robot that is free to move from a fixed position. The image processor discussed herein can provide such visual guidance. Such machines include guided weapons, satellites, aircraft, land vehicles, and even Star Wars R2D2 type robots. Guided weapons, such as cruise missiles and intelligent bombs, can be guided using mid-course and terminal visual guidance systems. Satellites can be positioned and oriented and spacecraft can be docked using visual control systems. Land vehicles

> can be guided using a visual guidance system; automatically following a roadway and detecting and circumventing obstacles.

These types of "applications" all would include images and the processing of images, where the processing may possibly include operations like the claimed image transformation, spatial interpolation, image compression and decompression, warping of images as well as many other processes (though Applicant does not indicate if such is the case in his originally filed specification). These sections may also apply to the variously claimed "products".

The specification is replete with the use of terms like "can be", "may be used", "could be used", "such as", "for example", etc. (see the above quoted sections of the specification from pages 454, 466, and 494, for example) without any accompanying specifics as to how these various possibilities and permutations of possibilities can be implemented (either individually or as part of a larger, complete system). The specification is simply an amalgamation of permutations of possibilities of things that might be able to be performed without any details to indicate that Applicant actually had possession of any of the possible systems. Nowhere in the lengthy specification does Applicant actually describe a complete and functioning system that would correspond to the claimed subject matter.

Applicant is claiming a complete system with the claimed

elements being connected to and responsive to other claimed elements. All of the claims recite various limitations that are, either explicitly or implicitly, connected to and dependent upon the other claimed elements to form the whole claimed system.

However, there is no recitation in the original specification that actually describes or supports the claimed combination of elements. Further, there is no Figure that actually shows the claimed combination of elements.

Applicant's claims are all directed to an image data processing system as a combination of processes/circuits, where the processes/circuits comprise: spatial interpolation; subpixel vector changes; transformation processor "coupled to the spatial interpolation" circuit and responsive to the spatial interpolation; resolution reduction; vector communication, including motion vectors and various fields of vectors and vector specifics as recited in claims such as claims 475, 477, 478, 480, 483-485, 487, 488, 491, 494, and others; shading; "fraction removal resolution reduction"; "Fourier transformation" (the term "Fourier" **never** appears in the original specification); roundoff resolution; temporal interpolation; a "DVD product"; "generating artificial intelligence information" in response to items such as "the transformed image information (claim 129); "GPS navigation"; as well as the specifics of the processes/circuits as recited in claims like claims 99-102; as well as many other processes and

combinations thereof. However, there is no disclosure directed to a system that performs these processes (or the accompanying hardware for performing these functions) in combination with one another.

While there may be mentions of these various elements (or processes) scattered throughout the specification, there is no disclosure of actually combining these disparate items into one complete integrated system as is now being claimed.

The twenty claims originally presented in this application were directed to systems for performing image transformations (rotation, translation, scaling, warping) and the registration of images. However, the claims have undergone extensive revision in seven amendments over a period of six years. The claims have evolved to a point where there are now numerous claims and they all recite a combination of processes/circuits, where the processes/circuits comprise: spatial interpolation; subpixel vector changes; transformation processor "coupled to the spatial interpolation" circuit and responsive to the spatial interpolation; resolution reduction; vector communication, including motion vectors and various fields of vectors and vector specifics as recited in claims such as claims 475, 477, 478, 480, 483-485, 487, 488, 491, 494, and others; shading; "fraction removal resolution reduction"; "Fourier transformation" (the term "Fourier" **never** appears in the original specification); roundoff resolution;

temporal interpolation; a "DVD product"; "generating artificial intelligence information" in response to items such as "the transformed image information (claim 129); "GPS navigation"; as well as the specifics of the processes/circuits as recited in claims like claims 99-102; as well as many other processes. None of the original claims were directed to these types of processing of image data of images, either individually or in combination with one another.

The examiner has carefully searched Applicant's lengthy specification both manually and electronically, looking for the features claimed. While many of the individually claimed terms do appear at various places in the original specification, these sections do not reasonably convey to one skilled in the relevant art that Applicant had possession of the claimed invention (specifically the claimed combination of elements) at the time the application was filed.

Applicant has provided no guidance as to "finding one's way through the woods" of Applicant's disclosure. Purdue Pharma L. P. v. Faulding Inc. 56 USPQ2d 1481 at 1487; In re Ruschig 379 F.2d 990, 154 USPQ 118 (CCPA 1967). Further, the generalized way in which the Applicant has written the specification hides what he may consider his invention. By presenting many different possible ways something can be implemented obscures the invention.

In conclusion, the originally filed specification provides no

specifics as to the claimed invention and does not convey to one of ordinary skill in the art that Applicant had possession of the invention as now claimed. If the mere vague suggestion of a possibility buried within a mountain of text is considered to be sufficient to satisfy the written description requirement, then this would be tantamount to saying that the writings of early science fiction writers were sufficient to indicate that they had possession of rocket travel, faster-than-light travel, time travel, robotics, satellites, and artificial intelligence. Clearly, this is not the case and it is just as clear that Applicant did not have possession of the claimed subject matter.

Simply disclosing various individual elements without the specifics of how they function together is tantamount to stating that a text book describes all possible combinations of the specifics individually discussed in separate chapters. For example, an image processing text book, which in different chapters describes image acquisition, image filtering operations, image storage techniques, and image display, could not be construed as an adequate description for a claimed video cassette recorder, a flight simulator, a medical imaging device, or any other claimed image processing "system" as a whole. A system is a combination of elements, where the combination is resultant from the interconnection of various components to perform a function. The interconnections and interactions of the claimed components to perform the claimed functions in combination is lacking from

Applicant's specification.

Objections

11. The drawings are again objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims.

12. The detailed statement of the objection advanced in the previous Office Action in paragraphs 3 and 8 is incorporated herein by reference.

13. The specification is again objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o).

14. The detailed statement of the objection advanced in the previous Office Action in paragraph 4 is incorporated herein by reference.

15. The statements advanced in paragraphs 12-15 of paper #27 as to the various "incorporations by reference" are again incorporated herein.

Claim Rejections - 35 U.S.C. § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 113, 125, 127, 193, 198, 215, 223, 238, 261, 264, 267, 276 are rejected under 35 U.S.C. 102(b) as being anticipated by the article, "Displacement Measurement and Its Application in Interframe Image Coding" by Jain et al. (hereinafter "Jain") (IEEE Transactions on Communications, vol. COM-29, No.12, December 1981).

As to claim 113, Jain discloses a process comprising the acts of:

storing a frame of prior pixel image information, the frame of prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing a frame of next pixel image information, the frame of next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9); and

generating subpixel change information, having subpixel

resolution by subtracting between the frame of prior pixel image information and the frame of next pixel image information (change information by subtracting shown at page 1800, left column, first full paragraph, and equation 1; change information is relevant to subpixel accuracy in use of "fraction of a pixel displacement," page 1802, left column, first full paragraph).

With regard to claim 125, Jain discloses a process comprising the acts of:

storing prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

generating temporally interpolated image information in response to the prior pixel image information and in response to the next pixel image information (page 1802, left column, first full paragraph; interpolating over several frames is a temporal interpolation); and

generating transformed image information in response to the

temporally interpolated image information, in response to the prior pixel image information, and in response to the next pixel image information (page 1803, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding"; note Fig.9, in which the transformed image information is generated, in the 2-D DCT block, after the temporally interpolated image information is generated).

With regard to claim 127, Jain discloses a process comprising the acts of:

storing prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9); and

generating transformed image information in response to the prior pixel image information, and in response to the next pixel image information (page 1803, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding"; Fig.6).

As to claim 193, Jain discloses a process comprising the acts

of:

storing pixel image information in a memory (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

generating delta subpixel image information having subpixel resolution by subtracting in response to the pixel image information stored in the memory and in response to feedback information (delta information by subtracting shown at page 1800, left column, first full paragraph, and equation 1; delta information is relevant to subpixel accuracy in use of "fraction of a pixel displacement," page 1802, left column, first full paragraph; feedback illustrated in Fig.6(b), at v^c, or Fig.9 at u^c for example); and

generating the feedback information in response to the delta subpixel image information (feedback illustrated in Fig.6(b), at v^c, or in Fig.9 at u^c for example, and is generated in response to the delta subpixel image information for the next frame, for example).

As to claim 198, Jain discloses a process comprising the acts of:

storing pixel image information in a memory (page 1799, right column, second full paragraph; page 1801, right column, first full

paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

generating subpixel difference image information having subpixel resolution in response to the pixel image information and in response to feedback information (difference information shown at page 1800, left column, first full paragraph, and equation 1; difference information is relevant to subpixel accuracy in use of "fraction of a pixel displacement," page 1802, left column, first full paragraph; feedback illustrated in Fig.6(b), at v^c, or in Fig.9 at u^c for example); and

generating the feedback information in response to the subpixel difference image information (feedback illustrated in Fig.6(b), at v^c, or Fig.9 at u^c for example, and is generated in response to the delta subpixel image information for the next frame, for example).

As to claim 215, Jain discloses a process comprising the acts of:

storing pixel image information in a memory (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

generating transformed image information in response to the pixel image information stored in the memory and in response to

feedback information (page 1803, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding"; Fig.6, 2-D DCT block; feedback illustrated in Fig.6(b), at v^c, or in Fig.9 at u^c for example); and

generating the feedback information in response to the transformed image information (feedback illustrated in Fig.6(b), at v^c, or Fig.9 at u^c for example, and is generated in response to the transformed image information, for the next frame, for example).

With regard to claim 223, Jain discloses a process comprising the acts of:

storing prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9); and

generating subpixel vector change information having subpixel resolution in response to the prior pixel image information and in response to the next pixel image information (change information by

subtracting shown at page 1800, left column, first full paragraph, and equation 1; change information is relevant to subpixel accuracy in use of "fraction of a pixel displacement," page 1802, left column, first full paragraph)

generating transformed image information in response to the prior pixel image information, and in response to the next pixel image information (page 1803, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding"; Fig.6).

With regard to claim 238, Jain discloses a process comprising the acts of:

storing a frame of prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing a frame of next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9); and

generating subpixel vector change information, having subpixel resolution in response to the frame of prior pixel image information and the frame of next pixel image information (change

information by subtracting shown at page 1800, left column, first full paragraph, and equation 1; change information is relevant to subpixel accuracy in use of "fraction of a pixel displacement," page 1802, left column, first full paragraph);

generating weight information (e.g., a_0 in Fig.6(a), after output of frame memory); and

generating weighted image information in response to the frame of prior pixel image information, in response to the frame of next pixel image information, and in response to the weight information (the image information after application of the weight information, Fig.6(a)).

With regard to claim 261, Jain discloses a process comprising the acts of:

storing prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9); and

generating subpixel vector change information having subpixel resolution in response to the prior pixel image information and in response to the next pixel image information (change information by subtracting shown at page 1800, left column, first full paragraph, and equation 1; change information is relevant to subpixel accuracy in use of "fraction of a pixel displacement," page 1802, left column, first full paragraph)

generating transformed image information in response to the prior pixel image information, and in response to the next pixel image information (page 1803, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding"; Fig.6).

With regard to claim 264, Jain discloses a process comprising the acts of:

storing a frame of prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing a frame of next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9); and

generating transformed image information in response to the frame of prior pixel image information, and in response to the frame of next pixel image information (page 1803, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding"; Fig.6).

With regard to claim 267, Jain discloses a process comprising the acts of:

storing prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9); and

generating transformed image information in response to the prior pixel image information, and in response to the next pixel image information (page 1803, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding"; Fig.6).

With regard to claim 276, Jain discloses a process comprising the acts of:

storing prior pixel image information (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing next pixel image information (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

generating temporally interpolated image information in response to the prior pixel image information and in response to the next pixel image information (page 1802, left column, first full paragraph; interpolating over several frames is a temporal interpolation); and

generating transformed image information in response to the temporally interpolated image information, in response to the prior pixel image information, and in response to the next pixel image information (page 1803, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding"; note Fig.9, in which the transformed image information is generated, in the 2-D DCT block, after the temporally interpolated image information is generated).

Claim Rejections - 35 U.S.C. § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

19. Claims 135, 159, 163 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jain.

As to claim 135, Jain discloses a system comprising:

a first frame memory storing a prior frame of image information (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(b) or 9);

a second from memory storing a next frame of image information (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(b) or 9).

Jain further discloses:

generating temporally interpolated image information in response to the prior frame of image information and in response to the next frame of image information (page 1802, left column, first full paragraph; interpolating over several frames is a temporal

interpolation; Figs 6 or 9); and

generating transformed image information in response to the temporally interpolated image information, in response to the prior frame of image information, and in response to the next frame of image information (page 1803, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding"; note Fig.9, in which the transformed image information is generated, in the 2-D DCT block, after the temporally interpolated image information is generated; Figs 6 or 9).

Jain does not explicitly disclose processors for generating image information, e.g., a temporal interpolation processor which generates the temporally interpolated image information, or a transform processor generating the transformed image information. However, Jain's process is applicable to "teleconferencing, videotelephone, television, satellite image transmission, medical imaging for computer aided tomography and angiocardiography, etc." In these fields, the use of processors and circuitry is commonplace. Note, for example, the computers used in computer aided tomography would utilize processors as well as circuitry. Given the applicability of Jain's process to these fields, and given the widespread use of processors and circuits in these fields, it would have been obvious, and well within the skill level of one of ordinary skill in the art, to implement the acts

disclosed by Jain, on processors or circuitry. Further, implementing the acts on processors or circuitry would allow the production of useful and useable system, allowing the process to be utilized in the fields intended.

As to claim 159, Jain discloses a system comprising:

a first frame memory storing a prior frame of image information, the frame of prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(b) or 9);

a second from memory storing a next frame of image information, the frame of next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(b) or 9).

Jain further discloses generating transformed image information in response to the prior frame of image information, and in response to the next frame of image information (page 1803, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding"; note Fig.9, in which the transformed image information is generated, in the 2-D DCT block, after the temporally interpolated image information is generated; Fig2 6 or

9).

Jain does not explicitly disclose processors for generating image information, e.g., a transform processor generating the transformed image information . However, Jain's process is applicable to "teleconferencing, videotelephone, television, satellite image transmission, medical imaging for computer aided tomography and angiocardiography, etc." In these fields, the use of processors and circuitry is commonplace. Note, for example, the computers used in computer aided tomography would utilize processors as well as circuitry. Given the applicability of Jain's process to these fields, and given the widespread use of processors and circuits in these fields, it would have been obvious, and well within the skill level of one of ordinary skill in the art, to implement the acts disclosed by Jain, on processors or circuitry. Further, implementing the acts on processors or circuitry would allow the production of useful and useable system, allowing the process to be utilized in the fields intended.

As to claim 163, Jain discloses a system comprising:

a first frame memory storing a prior frame of image information, the frame of prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any

one of figures 6(b) or 9);

a second from memory storing a next frame of image information, the frame of next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(b) or 9).

Jain further discloses:

generating subpixel vector change information having subpixel resolution in response to the prior pixel image information and in response to the next pixel image information (change information by subtracting shown at page 1800, left column, first full paragraph, and equation 1; change information is relevant to subpixel accuracy in use of "fraction of a pixel displacement," page 1802, left column, first full paragraph); and

generating transformed image information in response to the prior frame of image information, and in response to the next frame of image information (page 1803, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding"; note Fig.9, in which the transformed image information is generated, in the 2-D DCT block, after the temporally interpolated image information is generated; Figs 6 or 9).

Jain does not explicitly disclose processors or circuits for generating image information, e.g., a subpixel vector change

circuit generating subpixel vector change information, or a transform processor generating transformed image information. However, Jain's process is applicable to "teleconferencing, videotelephone, television, satellite image transmission, medical imaging for computer aided tomography and angiocardiography, etc." In these fields, the use of processors and circuitry is commonplace. Note, for example, the computers used in computer aided tomography would utilize processors as well as circuitry. Given the applicability of Jain's process to these fields, and given the widespread use of processors and circuits in these fields, it would have been obvious, and well within the skill level of one of ordinary skill in the art, to implement the acts disclosed by Jain, on processors or circuitry. Further, implementing the acts on processors or circuitry would allow the production of useful and useable system, allowing the process to be utilized in the fields intended.

20. Claims 143, 151, 190, 226, 241, 252, 258 and 380 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Jain and U.S. Patent 4,383,272 to Netravali et al. (hereinafter "Netravali").

As to claim 143, Jain discloses a process comprising the acts of:

storing prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

generating weight information (e.g., a_0 in Fig.6(a), after output of frame memory); and

generating weighted image information in response to the frame of prior pixel image information, in response to the frame of next pixel image information, and in response to the weight information (the image information after application of the weight information, Fig.6(a)).

Jain is silent with regard to scale factor information and generating scaled weighted image information. However, this is well known as disclosed by Netravali. Netravali, in an analogous environment, teaches a scale factor (column 6, line 54), and generating scaled weighted image information (column 6, lines 51-55). Netravali's invention provides for improved estimation of intensity information defining elements in a picture, and improve

reconstruction so as to eliminate annoying distortion and flicker (column 1, lines 44-52). Therefore, it would have been obvious to one of ordinary skill in the art to modify Jain's system according to Netravali.

As to claim 153, Jain discloses a process comprising the acts of:

storing pixel image information in a memory (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

generating weight information (e.g., a_0 in Fig.6(a), after output of frame memory); and

generating weighted image information in response to the frame of prior pixel image information, in response to the frame of next pixel image information, and in response to the weight information (the image information after application of the weight information, Fig.6(a));

generating feedback information (feedback illustrated in Fig.6(b), at v^c, or Fig.9 at u^c for example, and is generated in response to the weighted image information, for the next frame, for example).

Jain is silent with regard to scale factor information, generating scaled weighted image information, and generating

spatially interpolated image information. However, these are well known as disclosed by Netravali. Netravali, in an analogous environment, teaches a scale factor (column 6, line 54), and generating scaled weighted image information (column 6, lines 51-55). Netravali further teaches generating spatially interpolated image information (column 6, lines 32-33) in response to feedback information (via line 366 in Fig.3). Netravali's invention provides for improved estimation of intensity information defining elements in a picture, and improve reconstruction so as to eliminate annoying distortion and flicker (column 1, lines 44-52). Therefore, it would have been obvious to one of ordinary skill in the art to modify Jain's system according to Netravali.

With regard to claim 190, Jain discloses a process comprising:

storing pixel image information in a memory (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

generating subpixel change information, having subpixel resolution by subtracting in response to the pixel image information and in response to feedback information (change information by subtracting shown at page 1800, left column, first full paragraph, and equation 1; change information is relevant to subpixel accuracy in use of "fraction of a pixel displacement,"

page 1802, left column, first full paragraph; feedback illustrated in Fig.6(b), at v^c, or Fig.9 at u^c for example,)

generating the feedback information (feedback illustrated in Fig.6(b), at v^c, or Fig.9 at u^c for example, and is generated in response to the subpixel change image information, for the next frame, for example).

Jain is silent with regard to generating spatially interpolated image information. However, these are well known as disclosed by Netravali. Netravali, in an analogous environment, teaches generating spatially interpolated image information (column 6, lines 32-33) in response to feedback information (via line 366 in Fig.3). Netravali's invention provides for improved estimation of intensity information defining elements in a picture, and improve reconstruction so as to eliminate annoying distortion and flicker (column 1, lines 44-52). Therefore, it would have been obvious to one of ordinary skill in the art to modify Jain's system according to Netravali.

As to claim 226, Jain discloses a process comprising the acts of:

storing a frame of prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures

6(a), 6(b) or 9);

storing a frame of next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9); and

generating transformed image information in response to the frame of prior pixel image information, and in response to the frame of next pixel image information (page 1803, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding"; Fig.6).

Jain is silent with regard to generating spatially interpolated image information. However, these are well known as disclosed by Netravali. Netravali, in an analogous environment, teaches generating spatially interpolated image information (column 6, lines 32-33) in response to the frames of prior and next pixel image information (column 4, line 64 to column 5, line 2). Netravali's invention provides for improved estimation of intensity information defining elements in a picture, and improve reconstruction so as to eliminate annoying distortion and flicker (column 1, lines 44-52). Therefore, it would have been obvious to one of ordinary skill in the art to modify Jain's system according to Netravali.

With regard to claim 241, remarks similar to those presented above for claim 143 are applicable.

With regard to claim 252, Jain discloses a process comprising the acts of:

storing prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9).

Jain is silent with regard to generating spatially interpolated image information. However, these are well known as disclosed by Netravali. Netravali, in an analogous environment, teaches generating spatially interpolated image information (column 6, lines 32-33) in response to the prior and next pixel image information (column 4, line 64 to column 5, line 2). Netravali's invention provides for improved estimation of intensity information defining elements in a picture, and improve reconstruction so as to eliminate annoying distortion and flicker (column 1, lines 44-52).

Therefore, it would have been obvious to one of ordinary skill in the art to modify Jain's system according to Netravali.

As to claim 258, Jain discloses a process comprising the acts of:

storing a frame of prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing a frame of next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

generating prior motion vector information in response to the frame of prior pixel image information (page 1799, right column, second full paragraph of section II; "displacement vector" is a motion vector);

generating next motion vector information in response to the frame of next pixel image information (page 1799, right column, second full paragraph of section II; "displacement vector" is a motion vector);

Jain is silent with regard to generating spatially

interpolated image information. However, these are well known as disclosed by Netravali. Netravali, in an analogous environment, teaches generating spatially interpolated image information (column 6, lines 32-33) in response to the prior and next pixel image information (column 4, line 64 to column 5, line 2). Netravali's invention provides for improved estimation of intensity information defining elements in a picture, and improve reconstruction so as to eliminate annoying distortion and flicker (column 1, lines 44-52). Therefore, it would have been obvious to one of ordinary skill in the art to modify Jain's system according to Netravali.

With regard to claim 380, remarks analogous to those presented above for claim 143 are applicable.

21. Claims 109, 244 and 381 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Jain and U.S. Patent 4,375,650 to Tiemann.

With regard to claim 109, Jain discloses a process comprising the acts of:

storing a prior pixel block of image information, the prior pixel block of image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; blocks described at page 1800, left column, first full paragraph; page 1803, equations 24 and 25; storage

performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing a next pixel block of image information, the next pixel block of image representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; blocks described at page 1800, left column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

generating prior motion vector information in response to the prior pixel block of image information (page 1799, right column, second full paragraph of section II; "displacement vector" is a motion vector);

generating next motion vector information in response to the next pixel block of image information (page 1799, right column, second full paragraph of section II; "displacement vector" is a motion vector);

generating temporally interpolated image information by temporally interpolating between the prior motion vector information and the next motion vector information, in response to the prior pixel block of image information and in response to the next pixel block of (page 1802, left column, first full paragraph; interpolating over several frames is a temporal interpolation; Figs 6 or 9).

Jain utilizes 16x16 blocks, but does not disclose 64-pixel

blocks. However, such blocks are well known in the art as evidenced by Tiemann (column 5, lines 13-14). The inventions of both Tiemann and Jain are applicable to compression. Further, providing 64-pixel blocks as taught by Tiemann, as an alternative to Jain's blocks would have provided increased flexibility of the system and more efficient processing, resulting in reduced cost and improved processing.

As to claim 244, Jain discloses a process comprising the acts of:

storing a prior pixel block of image information (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; blocks described at page 1800, left column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing a next pixel block of image information (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; blocks described at page 1800, left column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

generating a temporally interpolated pixel block of image information by temporally interpolating between the prior pixel block of pixel image information and the next pixel block of pixel image information (page 1802, left column, first full paragraph;

interpolating over several frames is a temporal interpolation; Figs 6 or 9; page 1803, section under "Frame Interpolation" spanning left and right columns).

Jain utilizes 16x16 blocks, but does not disclose 64-pixel blocks. However, such blocks are well known in the art as evidenced by Tiemann (column 5, lines 13-14). The inventions of both Tiemann and Jain are applicable to compression. Further, providing 64-pixel blocks as taught by Tiemann, as an alternative to Jain's blocks would have provided increased flexibility of the system and more efficient processing, resulting in reduced cost and improved processing.

With regard to claim 381, remarks analogous to those presented above for claim 276 are applicable. With regard to 64-pixel blocks, see discussion above for claims 109 or 244.

22. Claims 110, 115, 126, 128, 130, 136, 144, 147, 148, 152, 160, 164, 191, 192, 194, 195, 196, 197, 199, 200, 216, 217, 224, 225, 227, 228, 229, 230, 231, 234, 239, 240, 242, 243, 245, 246, 247, 253, 254, 255, 256, 257, 259, 260, 262, 263, 265, 268, 269, 277, 278, 400, 403, 404, 408, 413, 415, 417, 433, 442, 454, 466, 474, 479, 484, 486, 489, 499, 501, 502, 505, 506 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Jain, Tiemann, and Netravali.

With regard to claim 115, Jain discloses a process comprising the acts of:

storing prior pixel image information, the prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing next pixel image information, the next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9).

Jain is silent with regard to generating spatially interpolated image information. However, these are well known as disclosed by Netravali. Netravali, in an analogous environment, teaches generating spatially interpolated image information (column 6, lines 32-33) in response to the prior and next pixel image information (column 4, line 64 to column 5, line 2). Netravali's invention provides for improved estimation of intensity information defining elements in a picture, and improve reconstruction so as to eliminate annoying distortion and flicker (column 1, lines 44-52). Therefore, it would have been obvious to one of ordinary skill in the art to modify Jain's system according to Netravali.

Jain utilizes 16x16 blocks, but does not disclose 64-pixel blocks. However, such blocks are well known in the art as evidenced by Tiemann (column 5, lines 13-14). The inventions of both Tiemann and Jain are applicable to compression. Further, providing 64-pixel blocks as taught by Tiemann, as an alternative to Jain's blocks would have provided increased flexibility of the system and more efficient processing, resulting in reduced cost and improved processing.

As to claim 229, Jain discloses a process comprising the acts of:

storing prior pixel image information, the prior pixel image information representing a prior image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

storing next pixel image information, the next pixel image information representing a next image (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equation 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

generating transformed image information (page 1803, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding"; Fig.6).

Jain is silent with regard to generating spatially interpolated image information. However, these are well known as disclosed by Netravali. Netravali, in an analogous environment, teaches generating spatially interpolated image information (column 6, lines 32-33) in response to the prior and next pixel image information (column 4, line 64 to column 5, line 2). Netravali's invention provides for improved estimation of intensity information defining elements in a picture, and improve reconstruction so as to eliminate annoying distortion and flicker (column 1, lines 44-52). Therefore, it would have been obvious to one of ordinary skill in the art to modify Jain's system according to Netravali.

Jain utilizes 16x16 blocks, but does not disclose 64-pixel blocks. However, such blocks are well known in the art as evidenced by Tiemann (column 5, lines 13-14). The inventions of both Tiemann and Jain are applicable to compression. Further, providing 64-pixel blocks as taught by Tiemann, as an alternative to Jain's blocks would have provided increased flexibility of the system and more efficient processing, resulting in reduced cost and improved processing.

With regard to claim 255, the discussion provided above for claim 115 is applicable.

With regard to claims 110, 126, 128, 130, 136, 144, 147, 148, 152, 160, 164, 191, 192, 194, 195, 196, 197, 199, 200, 216, 217,

224, 225, 227, 228, 230, 231, 234, 239, 240, 242, 243, 245, 246, 247, 253, 254, 256, 257, 259, 260, 262, 263, 265, 268, 269, 277, 278, 400, 403, 404, 408, 413, 415, 417, 433, 442, 454, 466, 474, 479, 484, 486, 489, 499, 501, 502, 505, 506, remarks previously presented for Jain, Tiemann and Netravali are applicable. Jain further discloses data compression and data decompression (e.g., Figs 5 and 6). Additionally, Tiemann teaches communicating information over an RF data link, and a communication data link (column 11, lines 54-55) which would be directly related to Jain's use in television image transmission (page 1799, first paragraph in Introduction). With regard to the claimed products, as discussed in the rejection under 35 U.S.C. §112, first paragraph, it is not at all clear what applicant means by "product." To the best understanding of the Examiner, in light of the non-enabling nature of applicant's disclosure, the products appear to be obvious in view of Jain, Tiemann and Netravali. For example, Jain teaches a communicated product (the transmitted image), a graphic product (the graphical image displayed on a television), a display product (the image displayed on a television), a telephone product (the image on a videotelephone), a moving product (see section III), a positioned product (a block in a frame at a particular position), a signal product (a signal produced by the system in Fig.6), a data compressed product (i.e., compressed image information), etc.

23. Claims 98-102, 105, 107-110, 112-113, 115-121, 123, 125, 127-131, 133, 135, 137, 139, 141, 143, 145, 147-153, 155, 157, 159, 161, 163, 165-167, 169, 171-173, 187, 189-190,192-193, 195-198, 200-201, 203-204, 206-209, 211-212, 214-219, 221-223, 225-226, 228-229, 231-232, 234-235, 237-238, 240-241, 243-244, 246-249, 251-253, 254-255, 257-258, 260-261, 263-264, 266-267, 269-270, 272-274, 275-276, 278-279, 281, 284-285, 301, and 380-548 are rejected under U.S.C. 103 (a) as being unpatentable over the combination of Marsh (4179824), Golin et al (4868653), Nickel (3905045), Widergren (4302775), and Robinson (4213150).

The statements advanced in Claim Rejections under section 35 U.S.C. 103 of the previous office action (paper #34) as to the applicability and the disclosure of the references are incorporated herein.

Nickel further teaches: spatially interpolated image information (i.e., the "interpolation" shown at 74, 76, 78 of figure 8 and mentioned at col. 3, lines 64-65 and col. 5, line 52 to col. 6 line 7 correspond to the so called "spatially interpolated image information") as required by amended claims 98-102.

Golin further teaches prior frame and next frame (i.e., the "last frame" and "next frame" respectively shown at 3908 and 3984 of figure 39) as additional required by claim 105;

Regarding claim 248, wherein the prior motion vector information includes prior frame horizontal-axis motion vector information and prior frame vertical-axis motion vector information; wherein the next motion vector information includes next frame horizontal-axis motion vector information and next frame vertical-axis motion vector information (see Marsh (see figure 1, element 16, FLIGHT SIMULATOR and element 12; figure 2A, elements 220, 260 and landing strip 230; column 4, line 55 through column 5, line 20).

As to all the new claims 510-548, all the features not specifically addressed here have already been covered in the previous rejection of claims as described in the previous office action (paper #34).

24. Claims 111 and 114 are rejected under U.S.C. 103 (a) as being unpatentable over the combination of combination of Marsh (4179824), Golin et al (4868653), Nickel (3905045), Widergren (4302775), and Robinson (4213150) as applied to claim 98-102, 105, 107-110, 112-113, 115-121, 123, 125, 127-131, 133, 135, 137, 139, 141, 143, 145, 147-153, 155, 157, 159, 161, 163, 165-167, 169, 171-173, 187, 189-190,192-193, 195-198, 200-201, 203-204, 206-209, 211-212, 214-219, 221-223, 225-226, 228-229, 231-232, 234-235, 237-238, 240-241, 243-244, 246-249, 251-253, 254-255, 257-258, 260-261, 263-264, 266-267, 269-270, 272-274, 275-276, 278-279, 281, 284-285,

301, and 380-548 above, and further in view of Graf et al. (US Patent No. 4,645,459).

The statements advanced with regard to the combination of combination of Marsh, Golin et al., Nickel, Widergren, and Robinson in the preceding paragraph as to the applicability and the disclosure of the references are incorporated herein.

As to claim 111, the newly added features of: digital video disk, video disk product, and DVD are not specifically taught by the combination of Marsh, Golin et al., Nickel, Widergren, and Robinson. However, However, Graf teaches video digital disk in col. 9, lines 18-20, 25, 30 which satisfies these so called "digital video disk", "video disk product", and "DVD".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate these claimed features as taught by Graf in combination with the combination of Marsh, Golin et al., Nickel, Widergren, and Robinson because by incorporating such features would greatly provide high-density storage, low data storage costs, excellent random access, high data rate, long life and secure data as suggested by Graf in col. 9 lines 47-68.

25. Claims 111 and 114 are rejected under U.S.C. 103 (a) as being unpatentable over the combination of combination of Marsh

(4179824), Golin et al (4868653), Nickel (3905045), Widergren (4302775), and Robinson (4213150) as applied to claim 98-102, 105, 107-110, 112-113, 115-121, 123, 125, 127-131, 133, 135, 137, 139, 141, 143, 145, 147-153, 155, 157, 159, 161, 163, 165-167, 169, 171-173, 187, 189-190,192-193, 195-198, 200-201, 203-204, 206-209, 211-212, 214-219, 221-223, 225-226, 228-229, 231-232, 234-235, 237-238, 240-241, 243-244, 246-249, 251-253, 254-255, 257-258, 260-261, 263-264, 266-267, 269-270, 272-274, 275-276, 278-279, 281, 284-285, 301, and 380-548 above, and further in view of Itoh et al. (US Patent No. 5,631,888).

The statements advanced with regard to the combination of Marsh, Golin et al., Nickel, Widergren, and Robinson in the preceding paragraph as to the applicability and the disclosure of the references are incorporated herein.

As to claims 111 and 114, note that the newly added features of "DVD product" is not specifically taught by the combination of Marsh, Golin et al., Nickel, Widergren, and Robinson. However, Itoh teaches a Digital Versatile Disc or DVD in col. 1, lines 25-44.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a DVD as taught by Itoh in combination with the combination of Marsh, Golin et al., Nickel, Widergren, and Robinson because by

incorporating such features would greatly provide high-density storage, low data storage costs, excellent random access, high data rate, long life and secure data.

26. Claims 106, 122, 124, 126, 132, 134, 136, 138, 140, 142, 144, 146, 154, 156, 158, 160, 162, 164, 168, 170, 188, 191, 194, 199, 202, 205, 210, 213, 220, 224, 227, 230, 233, 236, 239, 242, 245, 250, 253, 256, 259, 262, 265, 268, 271, 274, 277, and 280, are rejected under U.S.C. 103 (a) as being unpatentable over the combination of Marsh (4179824), Golin et al (4868653), Nickel (3905045), Widergren (4302775), and Robinson (4213150) as applied to claims 98-102, 105, 107-110, 112-113, 115-121, 123, 125, 127-131, 133, 135, 137, 139, 141, 143, 145, 147-153, 155, 157, 159, 161, 163, 165-167, 169, 171-173, 187, 189-190,192-193, 195-198, 200-201, 203-204, 206-209, 211-212, 214-219, 221-223, 225-226, 228-229, 231-232, 234-235, 237-238, 240-241, 243-244, 246-249, 251-253, 254-255, 257-258, 260-261, 263-264, 266-267, 269-270, 272-274, 275-276, 278-279, 281, 284-285, 301, and 380-548 and further in view of Anderson (US Patent No. 4,161,730).

The advanced statements with regard to the combination of Marsh (4179824), Golin et al (4868653), Nickel (3905045), Widergren (4302775), and Robinson (4213150) above are incorporated herein.

As to claims 106, 122, 124, 126, 132, 134, 136, 138, 140, 142,

144, 146, 154, 156, 158, 160, 162, 164, 168, 170, 188, 191, 194, 199, 202, 205, 210, 213, 220, 224, 227, 230, 233, 236, 239, 242, 245, 250, 253, 256, 259, 262, 265, 268, 271, 274, 277, and 280, the combination of Marsh, Golin et al., Nickel, Widergren, and Robinson does not explicitly disclose an RF communication link.

However, such utilization is well known and widely used method in the art as evidenced by Anderson in col. 7 lines 25-26. In these fields, the use of an RF communication link is commonplace.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the conventional teachings as taught by Anderson in combination with the combination of Marsh, Golin et al., Nickel, Widergren, and Robinson because by using RF in communication link would greatly improve the transmission/receiving bandwidth thereby reduce transmission and receiving times.

27. Claims 105, 121 are rejected under U.S.C. 103 (a) as being unpatentable over Jain et al. (Displacement Measurement and Its Application in Interframe Image Coding, IEEE Transactions on Communications, Vol. COM-29, No. 12, December 1981, pages: 1799-1808).

As to claims 105, 121, Jain teaches a system comprising:

a first memory storing a frame of prior pixel image information, the frame of prior pixel image information representing a prior frame (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

a second memory storing a frame of next pixel image information, the frame of next pixel image information representing a next image frame (page 1799, right column, second full paragraph; page 1801, right column, first full paragraph; page 1803, equations 24 and 25; storage performed in frame memory in any one of figures 6(a), 6(b) or 9);

a prior vector circuit (i.e., the "search of optimal displacement" block shown in figure 6) generating prior vector information (i.e., the "displacement vector" shown on "transmission link" in figure 6) in response to the frame of prior pixel image information (i.e., the "frame memory" block shown at figure 8 being used as an input to "search of optimal displacement" block. In addition, the difference generated by equation 1 shown in left column of page 1800 functions as these claimed features);

a next vector circuit generating next vector information in response to the frame of next pixel image information (see page 1800, left column, first full paragraph and equation 1);

a temporal interpolation circuit generating a frame of temporal interpolated information in response to prior vector information, in response to next vector information, in response to frame of prior pixel image information, and in response to frame of next image information (see page 1802, left column, first full paragraph; interpolating over several frames is a temporal interpolation).

Jain does not explicitly disclose processors for generating image information, e.g., a temporal interpolation processor which generates the temporally interpolated image information, or a transform processor generating the transformed image information. However, Jain's process is applicable to "teleconferencing, videotelephone, television, satellite image transmission, medical imaging for computer aided tomography and angiocardiography, etc." In these fields, the use of processors and circuitry is commonplace. Note, for example, the computers used in computer aided tomography would utilize processors as well as circuitry. Given the applicability of Jain's process to these fields, and given the widespread use of processors and circuits in these fields, it would have been obvious, and well within the skill level of one of ordinary skill in the art, to implement the acts disclosed by Jain, on processors or circuitry. Further, implementing the acts on processors or circuitry would allow the

production of useful and useable system, allowing the process to be utilized in the fields intended.

As to claim 248, Jain further teaches motion vector information (see "motion compensation" shown at figure 6b and 9 in together with page 1903, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding").

28. Claims 106, 122 are rejected under U.S.C. 103 (a) as being unpatentable over Jain et al as applied to claims 105, 121 above, and further in view of Anderson (US Patent No. 4,161,730).

The advanced statements with regard to Jain et al. above as applied to claims 105, 121 are incorporated herein.

As to claims 106, 122, Jain does not explicitly disclose an RF communication link.

However, such utilization is well known and widely used method in the art as evidenced by Anderson in col. 7 lines 25-26. In addition, Jain's process is applicable to "teleconferencing, videotelephone, television, satellite image transmission, medical imaging for computer aided tomography and angiocardiography, etc." In these fields, the use of an RF communication link is commonplace.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the conventional teachings as taught by Anderson in combination with

Jain et al. because by using RF in communication link would greatly improve the transmission/receiving bandwidth thereby reduce transmission and receiving times.

29. Claims 107, 123, and 266 are rejected under U.S.C. 103 (a) as being unpatentable over Jain et al. (Displacement Measurement and Its Application in Interframe Image Coding, IEEE Transactions on Communications, Vol. COM-29, No. 12, December 1981, pages: 1799-1808) in view of Netravali (US Patent No.4,383,272).

The advanced statement with regard to Jain above as applied to claims 105 and 121 are incorporated herein. Jain further teaches:

generating weight information (e.g., a0 in Fig.6(a), after output of frame memory); and generating weighted image information in response to the frame of prior pixel image information, in response to the frame of next pixel image information, and in response to the weight information (the image information after application of the weight information, Fig.6(a)); weight memory (i.e., the "frame memory" blocks shown in figure 6(a) functions as the so called "weight memory"); and writing circuit (i.e., the generating image information after the application of the weight information shown in figure 6(a) satisfies the so called "writing circuit") as additional required by claims 107 and 123.

Jain et al. does not explicitly teach generating spatially

interpolated image information. However, these features are well known and widely used methods in the art as evidenced by Netravali.

Netravali teaches generating spatially interpolated image information (see col. 6, lines 32-33).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the interpolated image information as taught by Netravali in combination with Jain et al. because by incorporating such features would provide for improving estimation of intensity information defining elements in a picture, and reconstruction so as to eliminate annoying distortion and flicker as suggested by Netravali in column 1 lines 44-52.

As to claim 266, Jain further teaches motion vector information (see "motion compensation" shown at figure 6b and 9 in together with page 1903, right column, third paragraph under "Motion Compensated Interframe Hybrid Coding").

30. Claims 108 and 124 are rejected under U.S.C. 103 (a) as being unpatentable over Jain et al. in view of Netravali (US Patent No.4,383,272) as applied to claim 107 above, and further in view of Anderson (US Patent No. 4,161,730).

The advanced statement with regard to Jain above as applied to claims 105, 121 are incorporated herein.

As to claims 108 and 124, Jain does not explicitly disclose an RF communication link.

However, such utilization is well known and widely used method in the art as evidenced by Anderson in col. 7 lines 25-26. In addition, Jain's process is applicable to "teleconferencing, videotelephone, television, satellite image transmission, medical imaging for computer aided tomography and angiocardiography, etc." In these fields, the use of an RF communication link is commonplace.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the conventional teachings as taught by Anderson in combination with Jain et al. and Netravali because by using RF in communication link would greatly improve the transmission/receiving bandwidth thereby reduce transmission and receiving times.

31. Claim 111 is rejected under U.S.C. 103 (a) as being unpatentable over the combination of Jain et al. and Tiemann (US Patent No. 4,375,650) as applied to claim 109 above, and further in view of Graf et al. (US Patent No. 4,645,459).

The statements advanced with regard to the combination of Jain et al. and Tiemann in the preceding paragraph as to the applicability and the disclosure of the references are incorporated

herein.

As to claim 111, the newly added features of: digital video disk, video disk product, and DVD are not specifically taught by the combination of Jain et al. and Tiemann. However, However, Graf teaches video digital disk in col. 9, lines 18-20, 25, 30 which satisfies these so called "digital video disk", "video disk product", and "DVD".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate these claimed features as taught by Graf in combination with the combination of Jain et al. and Tiemann because by incorporating such features would greatly provide high-density storage, low data storage costs, excellent random access, high data rate, long life and secure data as suggested by Graf in col. 9 lines 47-68.

32. Claim 111 is rejected under U.S.C. 103 (a) as being unpatentable over the combination of Jain et al. and Tiemann (US Patent No. 4,375,650) as applied to claim 109 above, and further in view of Itoh et al. (US Patent No. 5,631,888).

The statements advanced with regard to the combination of Jain et al. and Tiemann in the preceding paragraph as to the applicability and the disclosure of the references are incorporated herein.

As to claim 111, note that the newly added features of "DVD product" is not specifically taught by the combination of Jain et al. and Tiemann. However, Itoh teaches a Digital Versatile Disc or DVD in col. 1, lines 25-44.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a DVD as taught by Itoh in combination with the combination of Jain et al. and Tiemann because by incorporating such features would greatly provide high-density storage, low data storage costs, excellent random access, high data rate, long life and secure data.

33. Claim 114 is rejected under U.S.C. 103 (a) as being unpatentable over Jain et al. in view of Graf et al. (US Patent No. 4,645,459).

The statements advanced with regard to Jain et al. as applied to claim 113 in this office action as to the applicability and the disclosure of the references are incorporated herein.

As to claim 111, note that the newly added features of "DVD product" is not specifically taught by Jain et al.. However, Itoh teaches a Digital Versatile Disc or DVD in col. 1, lines 25-44.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a DVD as taught by Itoh in combination with Jain et al. and because by incorporating such features would greatly provide high-density

storage, low data storage costs, excellent random access, high data rate, long life and secure data.

34. Claim 114 is rejected under U.S.C. 103 (a) as being unpatentable over Jain et al. in view of Itoh et al. (US Patent No. 5,631,888).

The statements advanced with regard to Jain et al. as applied to claim 113 in this office action as to the applicability and the disclosure of the references are incorporated herein.

As to claim 114, the newly added features of: digital video disk, video disk product, and DVD are not specifically taught by the combination of Jain et al. and Tiemann. However, However, Graf teaches video digital disk in col. 9, lines 18-20, 25, 30 which satisfies these so called "digital video disk", "video disk product", and "DVD".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate these claimed features as taught by Graf in combination with the combination of Jain et al. and Tiemann because by incorporating such features would greatly provide high-density storage, low data storage costs, excellent random access, high data rate, long life and secure data as suggested by Graf in col. 9 lines 47-68.

Double Patenting

35. Requirements of 37 CFR 1.78(b)

a. The Examiner would like to note that a review of this application, and other related applications, reveals that there are numerous claims that contain the same basic limitations (or complete claim) with only a changed modifier (such as an adjective) to a limitation. For example, many claims in this application are directed to making various "products" in response to other claim elements. All of the other pending applications contain equivalent claims directed to "products". The specification is unclear as to how apparently very different processes can be used to make the same product. It appears that applicant has submitted very similar claims throughout a large number of applications (up to all 100 related applications with docket numbers from 700-799, and possibly more) with the only differences being changes in modifiers/adjectives for the limitations. Applicant is reminded that a clear line of demarcation should be maintained between each of the applications. Further, applicant is requested to indicate

(preferably in each application) exactly how claims to allegedly different systems (such as the systems in the above referenced applications) can be performed by the same elements. It appears that applicant has simply changed the modifiers in the claims in an attempt to allegedly change the type of system being claimed. Simply by changing the modifiers does not necessarily change the invention (particularly when the modifiers are themselves not enabled). A review of the claims in these applications clearly shows that they are (in general) substantially all the same except for the modifiers. The only differences appear with the inclusion of the modifiers/adjectives. However, these modifiers are only stuck into the claim language without any relation to either the structure (for apparatus claims) or functions (for method claims) being recited. Thus, it is clear that the "structure" being recited is independent of the modifiers.

b. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. The discussion above sets forth the Office's basis for its determination that each of these applications contains at least

one claim that conflicts with another one of the related co-pending applications identified above. Each of these applications includes the same specification and collectively these applications present over more than thousand claims. The Office has shown that each of these applications contains at least one claim that conflicts with another one of the related co-pending applications, and an analysis of each of more than thousand claims in the related co-pending applications would be an extreme burden on the Office requiring tens of thousands of claim comparisons. Therefore, the Office is requiring applicant to resolve the conflict between these applications and comply with 37 CFR 1.78(b) by either:

(1) filing a terminal disclaimer in each of the related twenty-nine applications terminally disclaiming each of the related applications; or,

(2) provide a statement that all claims in the co-pending applications have been reviewed by applicant and that no conflicting claims exist between the applications. Such a statement must set forth factual information identify how all the claims in the instant application are distinct and separate inventions from all the claims in the related applications.

Applicant is reminded that obviousness-type double patenting analysis entails a two-step process: (1) the claims of this application and the other related applications must be construed;

and (2) the claims of this application must be compared with the claims of the other applications to determine whether the differences in subject matter between the two claims render the claims patentably distinct. See Georgia-Pacific Corp. v. United States Gypsum Co., 195 F.3d 1322, 1326, 52 USPQ2d 1590, 1593 (Fed. Cir. 1999), and General Foods Corp. v. Studiengesellschaft Kohle, 972 F.2d 1272, 1279, 23 USPQ2d 1839, 1844 (Fed. Cir. 1992). As the Court of Customs and Patent Appeals (CCPA) explained: "[t]he fundamental reason for the rule [against "double patenting"] is *to prevent unjustified timewise extension of the right to exclude* granted by a patent no matter how the extension is brought about." In re Van Ornum, 686 F.2d 937, 943-44, 214 USPQ 761, 766 (CCPA 1982) (brackets and emphasis in the original) (quoting In re Schneller, 397 F.2d 350, 354, 158 USPQ 210, 214 (CCPA 1968)).

Response to Applicant's Remarks

36. The amendment filed July 26, 2001, that added and amended the claims contained no remarks directed to the claims or previous rejections. Applicant's previous remarks of record have been fully considered but are not found to be convincing with respect to the current rejections.

Contact Information

37. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Mancuso whose telephone number is (703) 305-3885. The examiner can normally be reached on Monday-Friday from 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au, can be reached on (703) 308-6604. The fax phone number for this Group is (703) 308-9589.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703)305-8576.

JM
May 29, 2002

JOSEPH MANCUSO
PRIMARY EXAMINER